

CONTENTS

- I. PROLOGUE
- II. SCREEN LAYOUT
- III. KEY REFERENCE
- IV. INSTRUMENTS
- V. EFFECTS
- VI. SONG VARIABLES
- VII. GETTING STARTED
- VIII. USEFUL TIPS
- IX. KNOWN PROBLEMS
- X. EPILOGUE

I. PROLOGUE

AdLib tracker is a 9-channel FM tracker for the OPL2-compatible chips found on most sound cards.

A few years ago, there was a huge variety of AdLib trackers. The most common were:

Zwerg Zwack/Chicken's HSC-Tracker,
 Jens-Christian Huus' EdLib,
 Shayde's Reality AdLib Tracker,
 Erik Pojar's Surprise! AdLib Tracker,
 and the latest piece of cake - Conqueror's Amusic.

This new way of AdLib tracking was just that missing part in scene, splitting the two different worlds: a world of ugly CMF shit, as Chicken used to say, and a world of sample based trackers, such as FastTracker or Impulse Tracker.

The above trackers became pretty popular and were used to produce very nice FM music, short on size but high on quality. Such tunes were included in many BBS intros and demos. Unfortunately, the things went wrong, and AdLib tracking has come to fruition.

Nowadays, at the end of second Millennium, i decided to revive this part of tracking history. Ladies and gentlemen, subz3ro is proud to present you a brandnew AdLib tool - /|DLiB TR/|CK3R |].

You may probably ask WHY? Let me use the words of Jens-Christian Huus, one of the most common people in C64 and AdLib programming, the author of EdLib:

"People begun to actually hate FM sounds. The arrival of GUS and AWE32 made wavetable techniques very popular and indeed it sounds very good, but there are some things in the old FM standard that is unique. You can't fiddle with samples in the same way as you can with FM. I personally never quite liked sampling, i find it downright boring. With a FM chip it is like on a C64; you have a few parameters and everything you do has to be done within these parameters. These boundaries makes it funny to make music, to see how far you can actually push AdLib. To do sounds on FM requires expertise but

if you're good at it, almost any instrument can be reproduced properly, except perhaps drums."

HIGHLIGHTS

- features best available software OPL3 playback to this date
- supports 4-op instruments, melodic and percussion instruments
- supports up to 255 instruments, 128 patterns, 128 order list entries, 89 effect commands, and 23 extended commands
- features 2 effect columns and instrument macro-definitions
- loads following song formats:
 - A2M (AdT2)
 - A2P (AdT2) [pattern]
 - A2T (AdT2) [tiny module]
 - N1/ AMD (Amusic)
 - CFF (BoomTracker 4.0)
 - DFM (Digital-FM)
 - N2/ FMK (FM-Kingtracker)
 - HSC (HSC AdLib Composer / HSC-Tracker)
 - MTK (MPU-401 tracker)
 - RAD (Reality AdLib Tracker)
 - N3/ S3M (Scream Tracker 3.x)
 - N4/ SAT (Surprise! AdLib Tracker) {ver.1,5,6}
 - N4/ SA2 (Surprise! AdLib Tracker 2.0) {ver.8,9}
 - N1/ XMS (XMS-Tracker)

NOTE 1

Because of bug in Amusic's (and its crack XMS-Tracker's) replay routine, the Arpeggio effect used to generate buggy sounds. Since /-DLiB TR/-CK3R][ain't got a support for such buggy things, the Arpeggio effect may differ.

NOTE 2

After conversion, the Tremolo and Vibrato effects may sound different, because FM-Kingtracker uses slow speed table (not 100% emulated in AT2) and optional waveform definitions that are currently not supported. Also the Retrigger Note effect is slightly different (if i should be honest, i really couldn't get any sense of Sami's frame counting; all i could do to make this effect sound way "authentic" was the frame correction during conversion phase--and this ain't perfect, though :) The OPL3 setting is ignored, Stereo setting is accepted, Rhythm mode is not supported, because it was incorrectly implemented in earlier versions of the tracker, and the author himself stopped supporting it. Also the pattern order list will be truncated to 128 if exceeds.

NOTE 3

Conversion of these (primarily sample based) modules may not be 100% exact. Therefore Slide Up/Down, Vibrato, and Tone Portamento effects may be inaccurate after importing to /-DLiB TR/-CK3R][. Anyway, some experimental methods are used to fix up the fine-tuning and frequency slide based Scream Tracker's effects during conversion phase (experimental understand as "non-perfect" :) Note that the optional vibrato/tremolo waveforms are not supported. Also the pattern order list will be truncated to 128 if exceeds.

NOTE 4

Since Surprise! AdLib Tracker uses non-standard Volume Slide procedure in replay routine, Volume Slide based effects may differ after importing to /-DLiB TR/-CK3R][. Anyway, an experimental method to fix up this difference is used during conversion phase (blabla, same as above :) The special arpeggio is also currently not supported (anyway, there are no SA2 modules using that feature, afaik :)

- loads following instrument formats:
 - A2i (AdT2)

A2F (AdT2) [w/fm-register macro]
 CiF (BoomTracker 4.0)
 FiN (FM-Kingtracker)
 iNS (HSC-Tracker/RAD-Tracker, SAdT, Amusic/AdLib instrument)
 SBi (Creative Labs FM instrument)
 SGi (Sound Generator 3.0)

Note that the type of "ins" file can be set up in configuration file if necessary (see option "force_ins").

- loads following bank formats:
 - A2B (AdT2)
 - A2W (AdT2) [w/macros]
 - BNK (AdLib instrument bank) {ver.1.0}
 - FiB (FM-Kingtracker)
 - iBK (Creative Labs FM instrument bank)
- The tracker supports block operations, and has an instrument editor. In addition, it features Tracing, Debugging, and a MidiBoard.
- The tracker reads many of its settings from a configuration file. It has strong support geared for row by row tracing, pausing, and playing from any line in a pattern.

II. SCREEN LAYOUT

The main window of the tracker is roughly composed of 5 parts:

- A. The upper left hand window shows the Status of the song (paused, playing, etc.), row number and order/pattern position, current speed/tempo, time playing and file information.
- B. The upper right hand window is the Pattern Order. There the user can build the order by which the patterns are played.
- C. The main window is the Pattern Editor with total count of 18/20 tracks, 5 tracks visible at a time, where the user can compose the song, enter the notes, commands, number of instrument, and effects.
- D. The Status Line at the bottom where the user can keep track of the different modes and the active mode which is highlighted (MBoard, Trace, Debug, Track, Synth!), active octave, active instrument, behavior mode, a.o. The user should experiment to gain familiarity with different modes that can be activated.
- E. The bottom window under Pattern Editor shows the Volume Analyzer. User have to scroll up the rest of main screen to see it. You can get all the volume information (carrier and modulator output level, overall volume and global song volume, approximate intensity in dB) there.

KEYBOARD CONVENTIONS

[A]	means the 'a' key on your keyboard
[^A]	means the 'a' key + [Ctrl]
[Shift] A	means the 'a' key + [Shift]
[Alt] A	means the 'a' key + [Alt]
[Shift] ^A	means the 'a' key + [Ctrl] + [Shift]
[Alt] ^A	means the 'a' key + [Ctrl] + [Alt]

In case of composite shortcuts, it is recommended to use following order of pressing the keys:

1st: [Ctrl] (if any)

2nd: **[Alt]** or **[Shift]** or **[Tab]** (if any)
3rd: "ordinary" key (if any :)

III. KEY REFERENCE

III/1. GENERAL KEY REFERENCE

```
F1 Help
F2 (^S) Save file
F3 (^L) Load file
F4 (^A) Toggle Nuke'm dialog
F5 Play
F6 Pause
F7 Stop
F8 Play song from current pattern or order
F9 Play current pattern or order only
[Ctrl] F8 @F8 from current line
[Ctrl] F9 @F9 from current line } (Pattern Editor)
[Alt] F6 Single-play pattern } (Shift toggles trace)
[Alt] F5 @F5
[Alt] F8 @F8 } without synchronization
[Alt] F9 @F9
[Shift] F2 Quick Save
[Shift] F3 Quick Load
[Shift] F5 F5 with Trace
[Shift] F6 Toggle Debug mode from position at cursor
[Shift] F8 F8 with Trace
[Shift] F9 F9 with Trace
[Shift] Space Toggle MidiBoard mode ON/OFF
^Space Toggle Note Recorder mode ON/OFF (if possible)
[Ctrl] Home,End Skip to previous/next pattern while Tracing
+,- Same as above; play pattern from start
```

WHEN IN NOTE RECORDER MODE

^Left, ^Right	Select group of tracks for recording	} ref. (*)
Enter	Start recording from current position (*)	
Space	Toggle using custom instrument for all tracks	
[Alt] Space	Toggle using present instruments in tracks	
MBoard keys	Write notes to corresponding tracks	
F8, F9	Toggle pattern repeat OFF/ON	
Backspace	Clear note/instrument sequence in tracks	
^Backspace	Clear complete note/instrument columns	
Up, Down	Rewind/Fast-Forward while recording	
[Shift] Up, Down	Increase/Decrease row correction for writing notes	
[Shift] F6	Continue in Debug mode from position at cursor	
F7	Stop recording and reset starting position; current group of tracks can be modified	
[Alt] 1..9, 0	Toggle track channel ON/OFF (Shift toggles 1X)	
[Alt] R	Reset flags on all tracks	
*	Reverse ON/OFF on all tracks	

In case you need non-continuous track selection, you can choose from already selected group a subset of tracks where notes will be written by manipulating track ON/OFF flags.

IF SONG IS PLAYED WITH TRACE, IT CAN BE REMOVED WHILE...

Enter	Playback is paused and cursor stays on position
Esc	Cursor jumps to last position and playback continues
[Shift] Esc	Cursor stays on position and playback continues

Note that playing with Trace and playing without synchronization can be set up in configuration file (see options "trace_by_default" and "nosync_by_default")

^Enter	Play next pattern according to order
^Left (Up)	Rewind current pattern (with Trace)
^Right (Down)	Fast-Forward (with Trace)
[Ctrl][Alt] <hold down>	Temporarily show Debug Info window
^B	Toggle Message Board window
^D	Toggle Debug Info window
^Q	Toggle Instrument Macro Editor window
^G	Toggle Arpeggio/Vibrato Macro Editor window
^M	Toggle Macro Browser window
^F	Toggle Song Variables window
^H	Toggle Replace window
^I	Toggle Instrument Control panel
^E	Toggle Instrument Editor window
^O	Toggle Octave Control panel
^P	Toggle Pattern List window
^R	Toggle Remap Instrument window
^T	Toggle Transpose window
^X	Toggle Rearrange Tracks window
^1..^8	Quick-set octave
[Alt] +, - (Up,Down)	Adjust volume level of sound output
[Alt] C	Copy object to clipboard (with selection)
[Alt] P	Paste object from clipboard
[Alt] M	Toggle marking lines ON/OFF
[Alt] L	Toggle Line Marking Setup window
[Alt] 1..9,0	Toggle track channel ON/OFF (Shift toggles 1X)
[Alt] S	Set all OFF except current track (solo)
[Alt] R	Reset flags on all tracks
*	Reverse ON/OFF on all tracks
F10	Quit program
F11	Toggle typing mode in Pattern Editor (AT-►FT-►ST)
F12	Toggle line feed in Pattern Editor
[Shift] F12	Toggle jump to marked line in Pattern Editor
[Ctrl][Tab] [...] (*)	Scroll Volume Analyzer section (if necessary)

(*) Up, Down, PgUp, PgDown

III/2. WAV RECORDER KEY REFERENCE

[Alt|Ctrl]{Shift} F11	Toggle WAV recording ON
[Alt|Ctrl]{Shift} F12	Toggle WAV recording OFF

FUNCTIONALITY OF ALTERNATIVE KEYS	
Alt	Toggle normal recording mode
Ctrl	Toggle 'per track' recording mode
Shift	Toggle Fade in / Fade out sound processing
POSSIBLE COMBINATIONS: Alt, Ctrl, Alt+Shift, Ctrl+Shift	

If 'per track' recording mode is activated and song playback is stopped you can exclude/include corresponding tracks from/to being recorded with ordinary track selection procedure:

[Alt] 1..9,0	Toggle track channel ON/OFF (Shift toggles 1X)
[Alt] S	Set all OFF except current track (solo)
[Alt] R	Reset flags on all tracks

III/3. PATTERN ORDER KEY REFERENCE

Up, Down, Left, Right	Cursor navigation
PgUp, PgDn	Move up/down 32 patterns
Home, End	Move to the top/end of pattern order
Tab, [Shift] Tab	Move to next/previous entry
Insert	Insert new entry
Delete	Delete entry
Backspace	Clear entry
^Space	Enter skip mark
^C	Copy entry to clipboard
^V	Paste entry from clipboard
+, -	Adjust entry
^F2	Save module in tiny format
Enter	Switch to Pattern Editor

Note that 80-FF pattern number range causes a jump in pattern order.
syntax: order_number[hex](+80h); e.g. "9A" jumps to order 1A

III/4. PATTERN EDITOR KEY REFERENCE

Up, Down, Left, Right	Cursor navigation
PgUp, PgDn	Move up/down 16 lines
Home, End	Move to the top/end of current pattern
Tab, [Shift] Tab	Move to next/previous track
[Shift] PgDn, PgUp (+, -)	Move to next/previous pattern
[Shift] Home, End	Move fwd./bckwd. to the first/last pattern
^Home, ^End	Move to the end/top of previous/next pattern
Space	Advance to next row
^PgUp, ^PgDn	Transpose note (block) halftone up/down
Backspace	Remove note or clear attributes
Insert	Insert new line (within track only)
Delete	Delete line (within track only)
[Shift] Insert	Insert new line
[Shift] Delete	Delete line
[Shift] Enter	Toggle fixed and regular note
^K	Insert Key-Off
^C	Copy object at cursor to clipboard
^V	Paste object from clipboard
[Alt][Shift] P	Paste object from clipboard to more patterns
^Z	Undo last operation (if possible)
{Ctrl} "[, "]"	Change current instrument
[Alt] F2	Save current pattern to file
^F2	Save module in tiny format
[Shift] F3	Quick load recent pattern data
Enter	Switch to Pattern Order

NOTE SYSTEM: C, C#, D, D#, E, F, F#, G, G#, A, A#, B(H)

VALID NOTE ENTRIES: C, C-, C#, C1, C-1, C#1...

BLOCK OPERATIONS IN PATTERN EDITOR

Starting to mark a block: **[Shift] Up, Down, Left, Right**
When at least one row in one track is marked, you can continue marking also with **PgUp, PgDn, Home, End** (**Shift** is still held down!)
Quick mark: **[Alt] Q** (1x-2x-3x) track → pattern → discard
Toggle last marked block: **[Alt] B**

^B Blank block (Insert blank block to pattern)
^C Copy block (Copy block to clipboard)
^D Delete block (Remove block from pattern)
^N Nuke block (Clear block contents)
^V Paste block (Paste block from clipboard to pattern) (*)
^X Cut block (Combine both Copy and Delete operation)

(*) PASTE BLOCK OPERATION VARIANTS

"Paste block" operation has three other functional variants

with different key shortcuts for activation:

- 1) **[Alt] V** toggles "Mix block" operation, when block data from clipboard is applied without overwriting existing data;
- 2) **[Shift] ^V** toggles "Selective paste block" operation, when only block data from clipboard corresponding to current cursor position is being applied (i.e. note, instrument, 1st effect or 2nd effect).
- 3) **[Alt][Shift] V** toggles "Flipped paste block" operation, when block data from clipboard is applied vertically flipped.

MANIPULATION WITH FX VOLUME INFORMATION

When there is block marked, which contains some effect commands carrying volume information, you can increase/decrease their values with +/- keys.

Effect commands are processed with following priority:

- 1) Set instrument volume (**Cxx**),
Force instrument volume (**=xx**)
- 2) Set modulator volume (**9xx**)
- 3) Set carrier volume (**Ixx**)
- 4) Set global volume (**%xx**)

If effect command with higher priority has been processed, all remaining effect commands with lower priority are skipped.

III/5. PATTERN LIST WINDOW KEY REFERENCE

Up, Down	Cursor navigation
PgUp, PgDn	Move up/down 20 patterns
Home, End	Move to the top/end of pattern list
Space	Mark/Unmark pattern
^Space	Unmark all marked patterns
[Shift] ^Space	Reverse marks on all patterns
[Alt] C (^C)	Copy pattern to clipboard
[Alt] P (^V)	Paste pattern from clipboard
[Shift] ^V	Paste pattern data from clipboard
[Alt] V	Paste pattern name from clipboard
^N	Nuke current pattern
[Shift] ^N	Nuke all marked patterns
^W	Swap marked patterns
[Shift] ^W	Swap marked patterns w/o names
[Shift] Insert	Insert new pattern
[Shift] Delete	Delete pattern
Enter	Rename pattern / Multiple paste
[Shift] F3	Quick load recent pattern data
Esc	Return to Pattern Editor or Pattern Order

III/6. INSTRUMENT CONTROL PANEL KEY REFERENCE

Up, Down	Cursor navigation
PgUp, PgDn	Move up/down 16 instruments
Home, End	Move to the top/end of instrument list
Space	Mark/Unmark instrument
MBoard keys <hold down>	Preview instrument
Enter	Rename instrument
^C	Copy instrument to clipboard
[Shift] ^C	Copy instrument also with macro-definitions
^V	Paste instrument(s) from clipboard
[Shift] ^V	Paste instrument data from clipboard
[Alt] V	Paste instrument name(s) from clipboard
^W	Swap marked instruments
[Shift] ^W	Swap marked instruments w/o names
Tab	Toggle Instrument Editor window
[Shift] Tab	Toggle Instrument Macro Editor window
[Shift] O	Toggle operator mode 40P / 20P
[Shift] M, B, S, T, C, H	Toggle <u>m</u> elodic and percussion (BD , SD , IT , TC , HH)

[Shift] F2	Save instrument w/ fm-register macro to file
[Alt] F2	Save instrument bank to file
^F2	Save instrument bank w/ all macros to file
[Shift] F3	Quick load recent instrument data
Esc	Return to Pattern Editor or Pattern Order

III/7. INSTRUMENT EDITOR WINDOW KEY REFERENCE

Up, Down, Left, Right,	Cursor navigation
Home, End	
[Alt] <section hotkey>	Jump to section
Tab	Jump to next setting
[Shift] Tab	Jump to previous setting
+, - (PgUp, PgDn)	Adjust value
Space	Select item
^Space (opt.)	Toggle ADSR preview ON/OFF
[Ctrl] "[", "]"	Change current instrument
[Ctrl][Shift] "[", "]"	Change macro speed
[Alt]{Shift} 1..4, 0	Set operators for instrument preview (*)
MBoard keys <hold down>	Preview instrument
Enter	Toggle carrier/modulator/40P slot settings
[Shift] 0	Toggle operator mode 40P / 20P
[Shift] M, B, S, T, C, H	Toggle <u>m</u> elodic and percussion (<u>B</u> D, <u>S</u> D, <u>T</u> T, <u>T</u> C, <u>H</u> H)
[Shift] F2	Save instrument w/ fm-register macro to file
[Shift] Enter	Copy values from carrier/modulator slot
Esc	Return to Instrument Control panel
(*) [Alt] 1..4	
[Alt][Shift] 1..4	Set solo operator
[Alt] 0	Toggle operator ON/OFF
	Reset

III/8. INSTRUMENT MACRO EDITOR WINDOW KEY REFERENCE

Up, Down, Left, Right	Cursor navigation
Home, End	
PgUp, PgDown	Move up/down 16 lines
Tab (Enter)	Jump to next field in order
[Shift] Tab	Jump to previous field in order
[Shift] Up, Down	Synchronous navigation within tables
[Shift] Home, End	Move to the start/end of current line in table
^Left, ^Right	Switch between macro tables
[Shift] ^Left, ^Right	Navigate to start/end of macro table
^PgUp, ^PgDown	Change current arpeggio/vibrato table
[Ctrl] "[", "]"	Change current instrument
[Ctrl][Shift] "[", "]"	Change macro speed
[Alt]{Shift} 1..4, 0	Set operators for instrument preview (*)
[Alt] ^C	Copy values from carrier column
[Alt] ^M	Copy values from modulator column
^C	Copy line in table (whole table respectively)
[Shift] ^C	Copy column in table
^V	Paste object from clipboard
^Enter	Paste data from instrument registers
[Shift] Enter	Paste data to instrument registers
[Shift] ^Enter	Paste data from instrument registers w/ selection
Backspace	Clear current item in table
[Shift] Backspace	Clear line in table
+, -	Adjust value at cursor / current item in table
^Home, ^End	Quick-adjust table length
[Shift] ^Home, ^End	Quick-adjust loop begin position
[Shift] ^PgUp, ^PgDown	Quick-adjust loop length
Insert	Insert new line in table
Delete	Delete line in table
^E	Toggle envelope restart ON/OFF
^N	Toggle note retrigger ON/OFF
^Z	Toggle ZERO frequency ON/OFF
[Alt] ^E, ^N, ^Z	Reset all alike flags in table

FM-register

^Backspace	Toggle corresponding column ON/OFF	table
[Alt] S	Set all OFF except current column	
[Alt] R	Reset flags on all columns	
*	Reverse ON/OFF on all columns	
\	Toggle current item (switch types only)	
Space	Toggle macro-preview mode	
^Space	Toggle Key-Off loop within macro-preview mode	
^F2	Save instrument bank w/ all macros to file	
Esc	Leave Instrument Macro Editor window	
(*) [Alt] 1..4	Set solo operator	
[Alt][Shift] 1..4	Toggle operator ON/OFF	
[Alt] 0	Reset	

III/9. APREGGIO/VIBRATO MACRO EDITOR WINDOW KEY REFERENCE

Up, Down, Left, Right	Cursor navigation
Home, End	Move up/down 16 lines
PgUp, PgDown	Jump to next field in order
Tab (Enter)	Jump to previous field in order
[Shift] Tab	Synchronous navigation within tables
[Shift] Up, Down	Switch between macro tables
^Left, ^Right	Navigate to start/end of macro table
[Shift] ^Left, ^Right	Change current arpeggio/vibrato table
^PgUp, ^PgDown	Change current instrument
[Ctrl] "[, "]"	Change macro speed
[Ctrl][Shift] "[, "]"	Set operators for instrument preview (*)
[Alt]{Shift} 1..4, 0	Copy line in table (whole table respectively)
^C	Copy column in table
[Shift] ^C	Paste object from clipboard
^V	Clear current item in table
Backspace	Clear line in table
[Shift] Backspace	Adjust value at cursor / current item in table
+, -	Quick-adjust table length
^Home, ^End	Quick-adjust loop begin position
[Shift] ^Home, ^End	Quick-adjust loop length
[Shift] ^PgUp, ^PgDown	Toggle macro-preview mode
Space	Toggle Key-Off loop within macro-preview mode
^Space	Leave Arpeggio/Vibrato Macro Editor window
Esc	
(*) [Alt] 1..4	Set solo operator
[Alt][Shift] 1..4	Toggle operator ON/OFF
[Alt] 0	Reset

III/10. INSTRUMENT MACRO BROWSER KEY REFERENCE

Up, Down, PgUp, PgDown	Cursor navigation
Home, End	Move up/down in macro table
[Shift] Up, Down	Move left/right in macro table
[Shift] Left, Right	Move page up/down in macro table
[Shift] PgUp, PgDown	Move to the start/end of macro table
[Shift] Home, End	Move to the start/end of line in macro table
[Ctrl] Home, End	Load selected macro data
Enter	Load all macro data from bank
^Enter (opt.)	Change macro speed
[Ctrl][Shift] "[, "]"	Preview instrument with selected macro data
MBoard keys <hold down>	Switch to Arpeggio/Vibrato Macro Browser window
Tab (opt.)	Leave Instrument Macro Browser window
Esc	

III/11. ARPEGGIO/VIBRATO MACRO BROWSER KEY REFERENCE

Up, Down, PgUp, PgDown

Home,End	Cursor navigation	
[Shift] Left,Right	Move left/right in arpeggio table	} refer to (*)
[Shift] PgUp,PgDown	Move page left/right in arpeggio table	
^Left,^Right	Move left/right in vibrato table	
^PgUp,^PgDown	Move page left/right in vibrato table	
[Shift]{Alt} Space	Toggle arpeggio table selection (**)	
[Ctrl] {Alt} Space	Toggle vibrato table selection (**)	
[Shift] Home,End	Navigate to start/end of arpeggio table	
^Home,^End	Navigate to start/end of vibrato table	
[Ctrl] "[,]"	Change current instrument	
[Ctrl][Shift] "[,]"	Change macro speed	
MBoard keys <hold down>	Preview instrument with selected macro data	
Enter	Load selected macro data	
^Enter (opt.)	Load all macro data from bank	
[Shift] Esc	Apply table indexes to current instrument	
Esc	Leave Arpeggio/Vibrato Macro Browser window	

(*) Key combination with **Ctrl+Shift** applies action to both tables
(**) **Alt** key invokes no arpeggio resp. vibrato table (index value reset)

III/12. DEBUG INFO WINDOW KEY REFERENCE

Up,Down,Left,Right	
Home,End	Change current track
Tab	Toggle details
Backspace	Toggle pattern repeat
Space	Enter Debug mode / Proceed step (if possible)
^Space	Exit Debug mode
[Ctrl] Home,End	Skip to previous/next pattern
+, -	Same as above; play pattern from start
^Enter	Play next pattern according to order
^Left	Rewind current pattern
^Right	Fast-Forward
[Alt] 1..9,0	Toggle track channel ON/OFF (Shift toggles 1X)
[Alt] S	Set all OFF except current track (solo)
[Alt] R	Reset flags on all tracks
*	Reverse ON/OFF on all tracks
Esc	Return to Pattern Editor or Pattern Order

III/13. REMAP INSTRUMENT WINDOW KEY REFERENCE

Up,Down,Left,Right	
Home,End	Cursor navigation
PgUp,PgDown	Move up/down 16 instruments
Tab	Jump to next selection
[Shift] Tab	Jump to previous selection
MBoard keys <hold down>	Preview instrument
Enter	Remap
Esc	Return to Pattern Editor or Pattern Order

III/14. REARRANGE TRACKS WINDOW KEY REFERENCE

Up,Down,Left,Right,	
Home,End	Cursor navigation
Tab	Jump to next selection
[Shift] Tab	Jump to previous selection
^PgUp,^PgDown	Shift track at cursor up/down in the track list
[Shift] ^PgUp,^PgDown	Rotate track list from cursor upside/downside
Enter	Rearrange
Esc	Return to Pattern Editor or Pattern Order

III/15. REPLACE WINDOW KEY REFERENCE

Up, Down, Left, Right, Home, End	Cursor navigation
Tab	Jump to next selection
[Shift] Tab	Jump to previous selection
^K	Insert Key-Off in note column
^N	Mark "new" field to clear found item
^W	Swap "to find" and "replace" mask content
Delete, Backspace	Delete current/previous character
^Backspace	Delete "to find" or "replace" mask content
[Shift] ^Backspace	Delete content of both masks
Enter	Replace
Esc	Return to Pattern Editor or Pattern Order

III/16. SONG VARIABLES WINDOW KEY REFERENCE

Up, Down, Left, Right	Cursor navigation
Tab (Enter)	Jump to next variable field
[Shift] Tab	Jump to previous variable field
Space	Select item
Esc	Return to Pattern Editor or Pattern Order

III/17. FILE BROWSER KEY REFERENCE

Up, Down, Left, Right, PgUp, PgDown, Home, End \ (/ for Linux)	Cursor navigation
Backspace	Navigate to root directory
[Shift] Backspace	Navigate to parent directory
MBoard keys <hold down>	Navigate to program home directory
Enter	Preview instrument (instrument files only)
Esc	Choose file under cursor / read instrument bank
	Leave without choosing file

III/18. MESSAGE BOARD WINDOW KEY REFERENCE

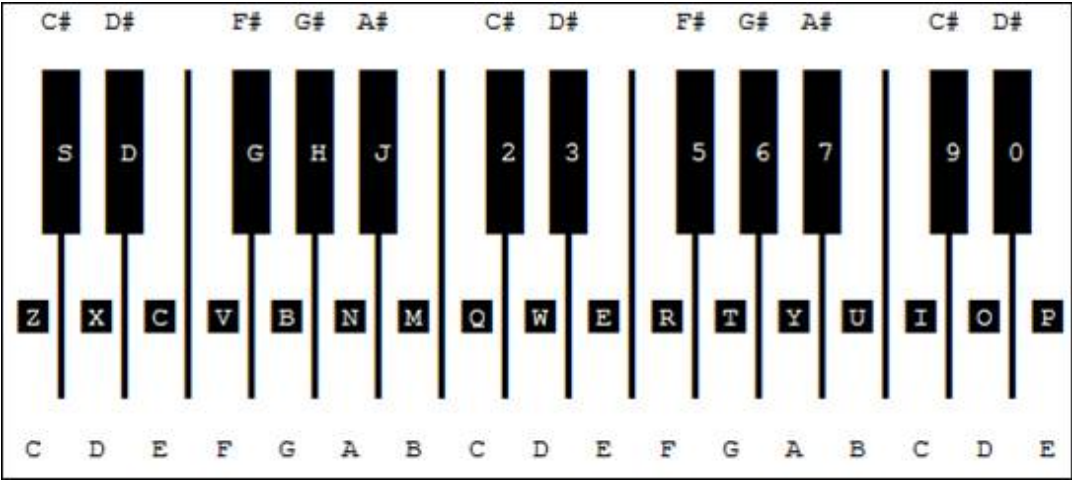
Up, Down, Left, Right, ^PgUp, ^PgDown, Home, End, ^Home, ^End	Cursor navigation
PgUp, PgDown	Move backwards/forwards over text
^Left, ^Right	Move word left/right
Backspace, Delete	Delete character left/right
^Backspace, ^T	Delete word left/right
^K	Delete characters to end
^Y	Delete current line
Tab	Indent current line
^Space	Insert row for text at cursor
[Shift] ^Backspace	Delete row for text at cursor
Insert	Toggle input and overwrite mode
Enter	Wrap line of text
Esc	Return to Pattern Editor or Pattern Order

III/19. INPUT FIELD KEY REFERENCE

Left, Right	Move left/right
Home, End	Move to the begin/end
^Left, ^Right	Move word left/right
Backspace, Delete	Delete character left/right
^Backspace, ^T	Delete word left/right
^K	Delete characters to end
^Y	Delete string
Insert	Toggle input and overwrite mode

III/20. MiDiBOARD KEY REFERENCE

Use to enter notes while in MBoard mode (if not already active, **Shift+Space** activates this mode if song is Stopped, or if song is Paused with no Trace).



WHILE TRACKER IS IN MBOARD MODE

MBoard key copies note in note field, plays it, and advances song to next row. If used with **Left-Shift** key and line marking toggled ON, it advances song to next highlighted row.
If used with **Right-Shift** key, it makes a fixed note.
Space plays row and advances song by one row.
` inserts Key-Off, releases playing note and advances to next row.

IV. INSTRUMENTS

ATTACK RATE

Indicates how fast the sound volume goes to maximum.
1=slow, 15=fast. 0 means no attack phase.

DECAY RATE

Indicates how fast the sound goes from maximum level to sustain level.
1=slow, 15=fast. 0 means no decay phase.

SUSTAIN LEVEL

Indicates the sustain level.
1=loudest, 15=softest. 0 means no sustain phase.

RELEASE RATE

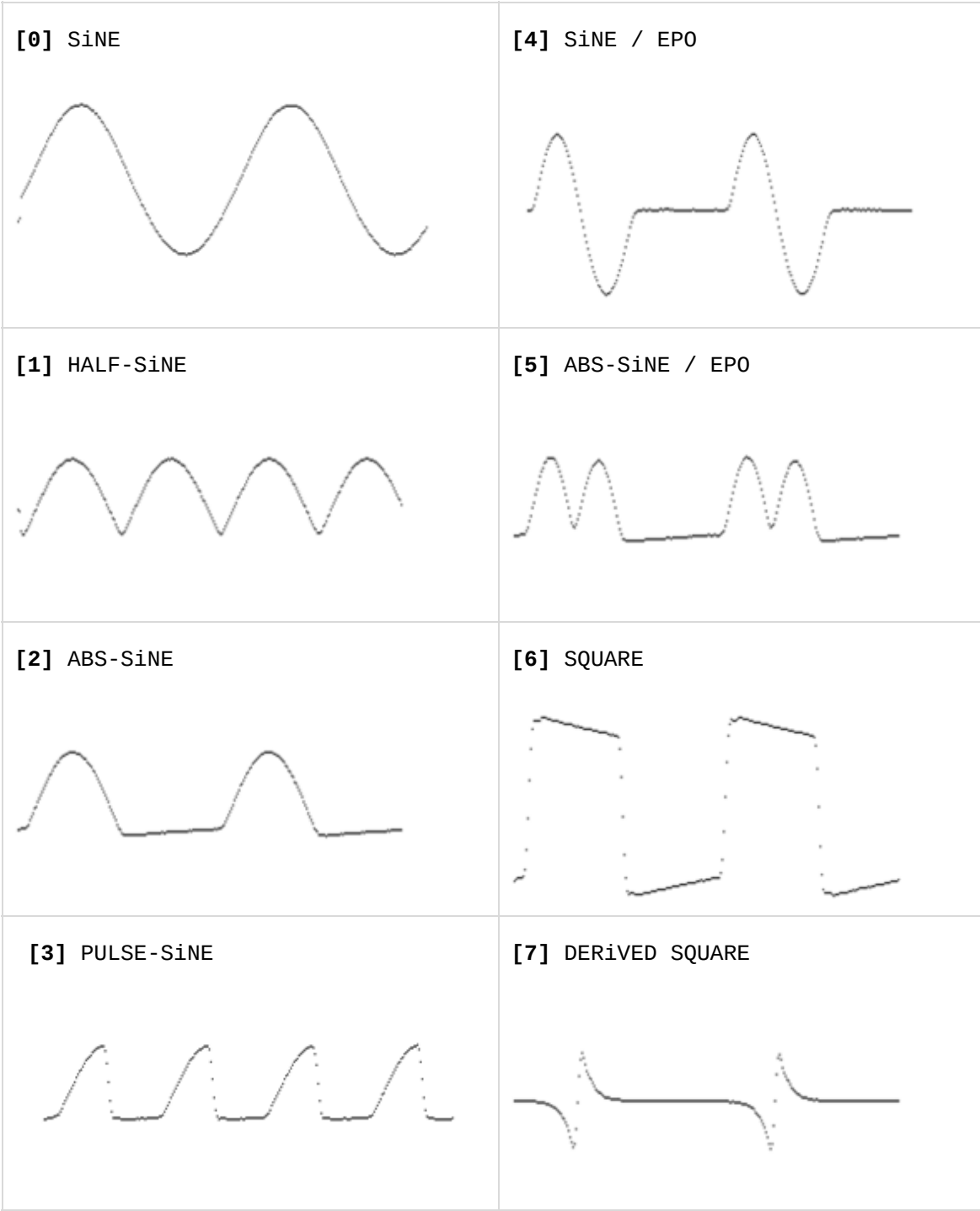
Indicates how fast the sound goes from sustain level to zero level.
1=slow, 15=fast. 0 means no release phase.

OUTPUT LEVEL

Ranges from 0 to 63, indicates the attenuation according to the envelope generator output. In Additive synthesis, varying the output level of any operator varies the volume of its corresponding channel. In FM synthesis, varying the output level of carrier varies the volume of its corresponding channel, but varying the output of the modulator will change the frequency spectrum produced by the carrier.

WAVEFORM SELECT

Specifies the output waveform type.
The first is closest to pure sine wave, the last is most distorted.



KEY SCALiNG LEVEL (KSL)

When set, makes the sound softer at higher frequencies.
 With musical instruments, volume decreases as pitch increases.
 Level key scaling values are used to simulate this effect.
 If any (not zero), the diminishing factor can be 1.5 dB/octave,
 3.0 dB/octave, or 6.0 dB/octave.

PANNING

Gives you ability of controlling output, going to left or right channel,
 standing in the middle respectively.
 The parameter corresponds either with carrier and modulator, therefore
 it is listed only once (within the carrier slot).

FINE-TUNE

This is not a hardware parameter.
 Ranges from -127 to 127, it indicates the number of frequency units
 shifted up or down for any note playing with the corresponding instrument.
 The parameter corresponds either with carrier and modulator, therefore
 it is listed only once (within the carrier slot).

FEEDBACK STRENGTH

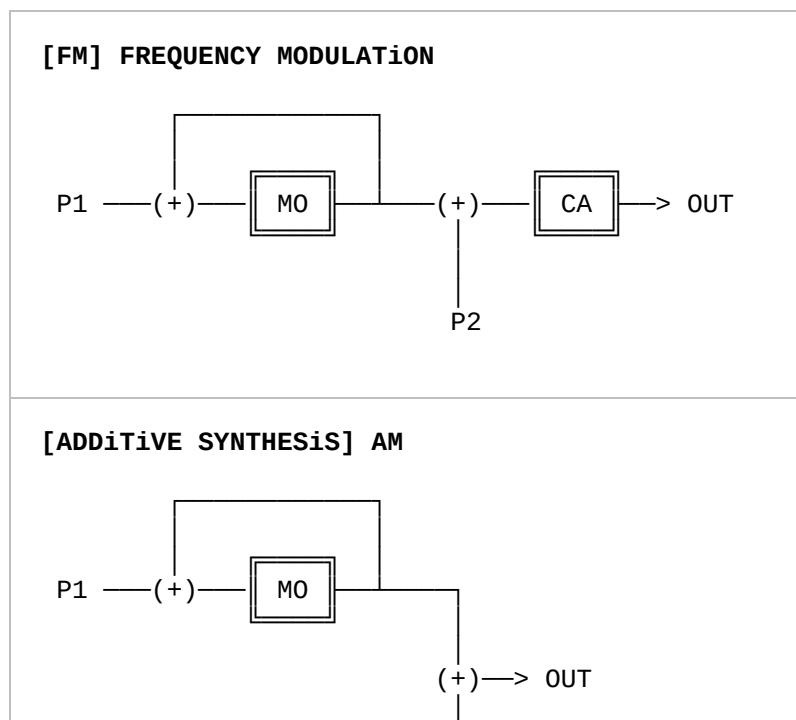
Ranges from 0 to 7, it indicates the modulation depth
 for the modulator slot FM feedback.

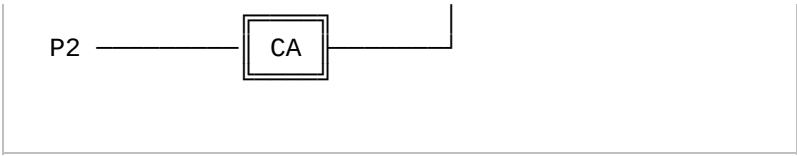
FEEDBACK	[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]
MODULATION	0	$\pi/16$	$\pi/8$	$\pi/4$	$\pi/2$	π	2π	4π

The parameter corresponds either with carrier and modulator, therefore
 it is listed only once (within the carrier slot).

CONNECTION TYPE

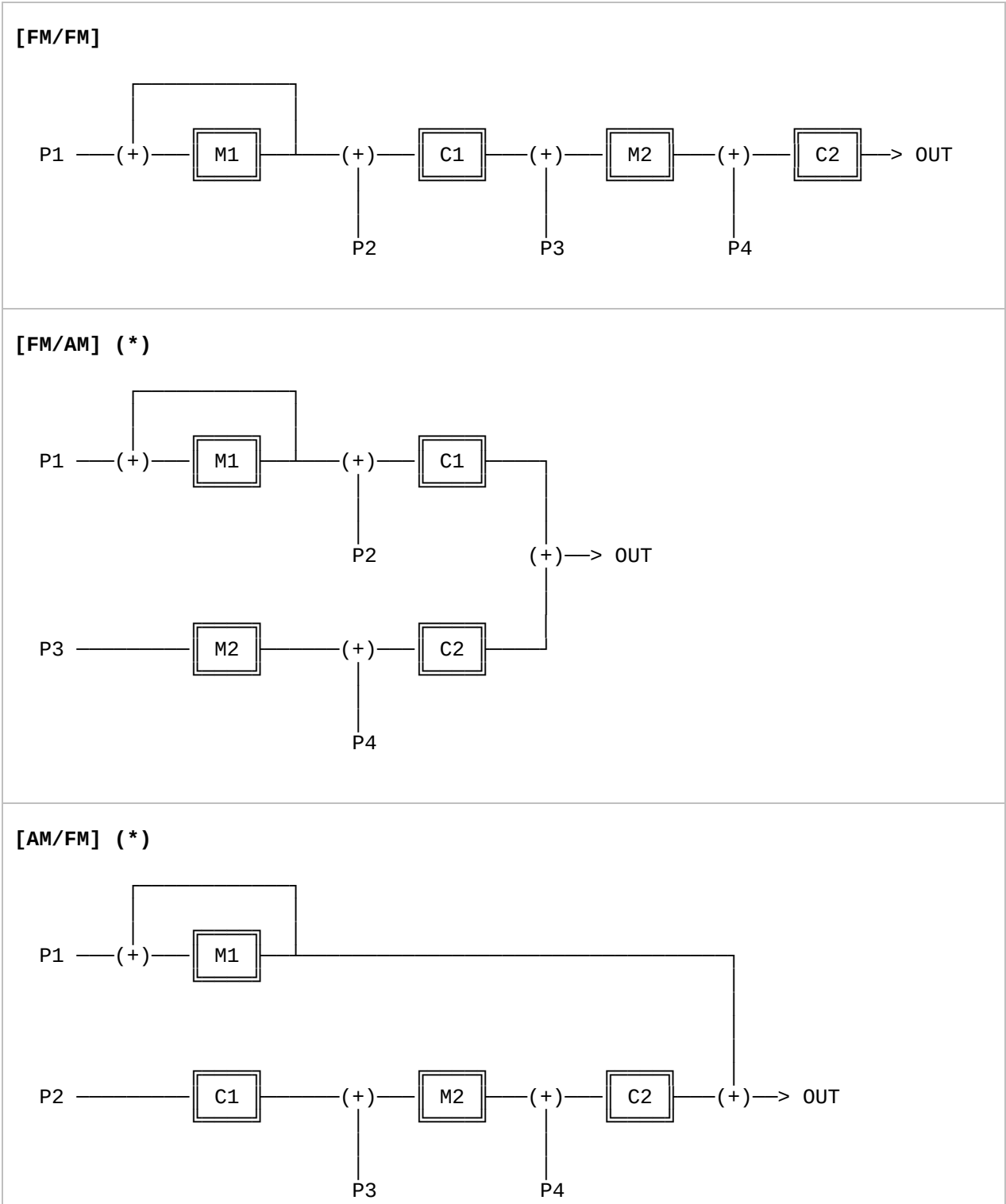
Frequency modulation means that the modulator slot modulates the carrier.
 Additive synthesis means that both slots produce sound on their own.



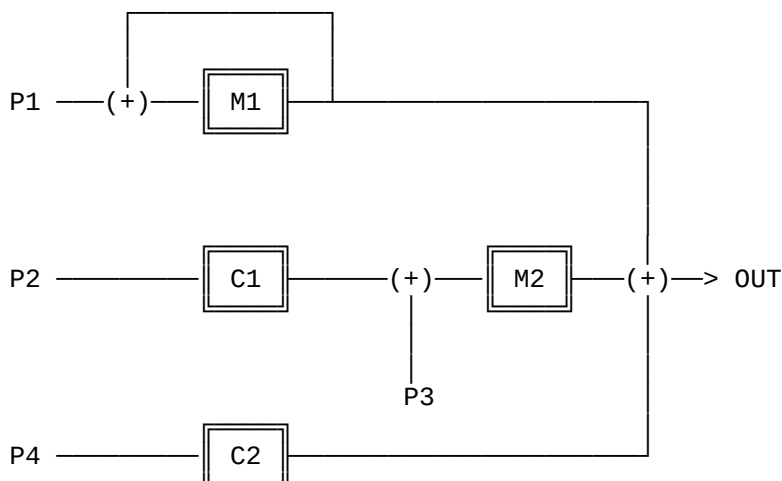


The parameter corresponds either with carrier and modulator, therefore it is listed only once (within the carrier slot). This parameter is also very important when making 4-op instruments, because the combination of two instrument connections specifies the connection of the 4-op instrument as shown below:

SLOT	M1	C1	M2	C2
OPERATOR	1	2	3	4



[AM/AM]



(*) REMARK ABOUT 40P CONNECTIONS

Please note, that since order of 40P tracks in the tracker is ²⁾ and ¹⁾, these non-symmetrical instrument connections are reversed. The preview diagrams in the Instrument Editor window show actual order, but here this information is kept in conformity with the official Yamaha YMF262 data specification to prevent further confusion.

TREMOLO (AMPLITUDE MODULATION)

When set, turns tremolo (volume vibrato) ON for the corresponding slot. The repetition rate is 3.7Hz, the depth is optional (1dB/4.8dB).

VIBRATO

When set, turns frequency vibrato ON for the corresponding slot. The repetition rate is 6.1Hz, the depth is optional (7%/14%).

KEY SCALE RATE (KSR)

When set, makes the sound shorter at higher frequencies. With normal musical instruments, the attack and decay rate becomes faster as the pitch increases. The key scale rate controls simulation of this effect. An offset (rof) is added to the individual attack, decay, and release rates depending on the following formula:

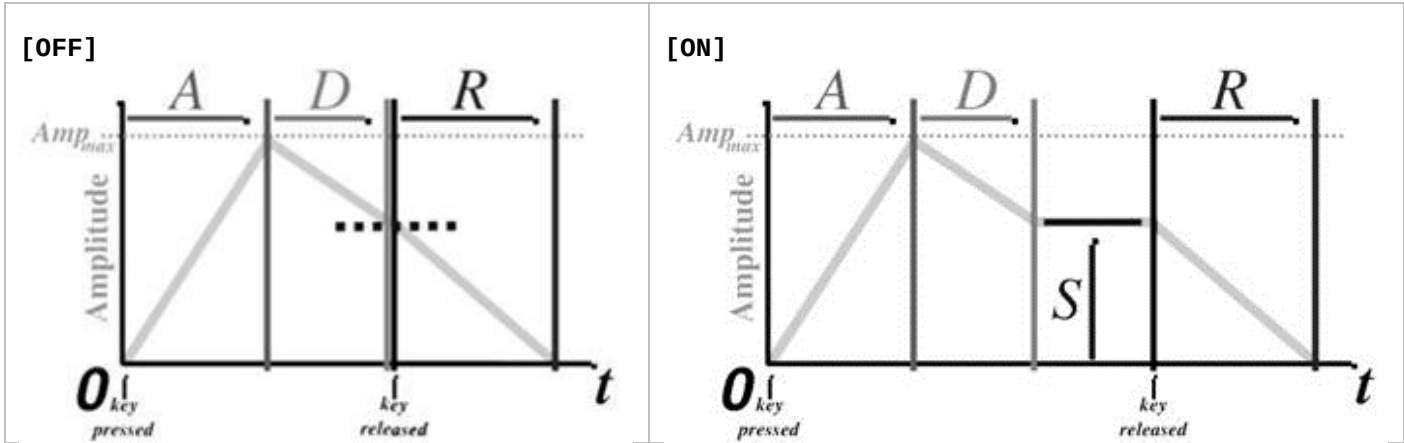
$$\text{actual_rate} = (\text{rate} * 4) + \text{rof}$$

The "rof" values for corresponding "rate" value and KSR state are shown in the following table:

%rate%	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
[OFF]	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3
[ON]	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

SUSTAIN (ENVELOPE GENERATOR TYPE)

When set, the sustain level of the voice is maintained until released.
When clear, the sound begins to decay immediately after hitting the sustain phase.



FREQUENCY DATA MULTIPLIER

Sets the multiplier for the frequency data specified by block and F-number. This multiplier is applied to the FM carrier or modulation frequencies. The multiplication factor and corresponding harmonic types are shown in the following table:

MULT.	x	HARMONiC
[0]	0.5	1 octave below
[1]	1	at the voice's specified frequency
[2]	2	1 octave above
[3]	3	1 octave and a 5th above
[4]	4	2 octaves above
[5]	5	2 octaves and a Major 3rd above
[6]	6	2 octaves and a 5th above
[7]	7	2 octaves and a Minor 7th above
[8]	8	3 octaves above
[9]	9	3 octaves and a Major 2nd above
[A]	10	3 octaves and a Major 3rd above
[B]	10	... ..
[C]	12	3 octaves and a 5th above
[D]	12	... ..
[E]	15	3 octaves and a Major 7th above
[F]	15	... ..

V. EFFECTS

[0xy] ARPEGGi0

This command causes the note to quickly cycle through three notes: the note playing, a note 'x' halftones above, and a note 'y' halftones above. This causes an effect similar to old C64 chords.

Note that the song speed has to be greater or equal to three in order to perform arpeggio effect completely.

[1xx] FREQUENCY SLIDE UP

This command slides the frequency up (pitch bend).
Parameter 'xx' gives speed of slide.

[2xx] FREQUENCY SLIDE DOWN

This command slides the frequency down (pitch bend).
Parameter 'xx' gives speed of slide.

[3xx] TONE PORTAMENTO

This command is used together with a note and will slide to its frequency.
Parameter 'xx' gives speed of slide.
If you specify 'xx' as '00' then the previous value will be used.

[4xy] VIBRATO

This command causes the frequency to oscillate with depth 'y' at speed 'x'.
If you specify 'xy' as '00' then the previous value will be used.

[5xy] TONE PORTAMENTO WITH VOLUME SLIDE

This command executes both Tone portamento and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[6xy] VIBRATO WITH VOLUME SLIDE

This command executes both Vibrato and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[7xx] FINE FREQUENCY SLIDE UP

This command slides the frequency up (pitch bend) once per row.
Parameter 'xx' gives speed of slide.

[8xx] FINE FREQUENCY SLIDE DOWN

This command slides the frequency down (pitch bend) once per row.
Parameter 'xx' gives speed of slide.

[9xx] SET MODULATOR VOLUME

This command sets the volume of modulator slot.
Value of 'xx' ranges from 0 to 3F (softest -> loudest).

[Axy] VOLUME SLIDE

This command fades the volume up or down at the given speed.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'x' then 'y' is not used, and vice versa.

[Bxx] PATTERN JUMP

This command causes the song to jump to order 'xx'.
This is often used to create looping songs.
If two 'Bxx' commands are given, then the command in the higher track will take effect.

[Cxx] SET INSTRUMENT VOLUME

This command sets the absolute volume of the instrument.
It is equal to Ixx command when instrument uses FM connection,
otherwise both carrier and modulator volume is updated.
Value of 'xx' ranges from 0 to 3F (softest -> loudest).

[Dxx] PATTERN BREAK

This command signifies the end of the current pattern, and also that the next pattern should be played from row 'xx'.
If two 'Dxx' commands are given, then the command in the higher track will take effect.

[Exx] SET TEMPO

This command changes the song tempo (also known as BPM).
Parameter 'xx' gives hexadecimal value of refresh rate in Hz.
If two 'Exx' commands are given, then the command in the higher track will take effect.

[Fxx] SET SPEED

This command changes the song speed.
Parameter 'xx' gives how many frames to wait before advancing row.
If two 'Fxx' commands are given, then the command in the higher track will take effect.

[Gxy] TONE PORTAMENTO WITH FINE VOLUME SLIDE

This command executes both Tone portamento and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Hxy] VIBRATO WITH FINE VOLUME SLIDE

This command executes both Vibrato and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Ixx] SET CARRIER VOLUME

This command sets the volume of carrier slot.
Value of 'xx' ranges from 0 to 3F (softest -> loudest).

[Jxy] SET WAVEFORM

This command changes the waveform of carrier or modulator slot.
Parameter 'x' gives carrier and 'y' modulator waveform type as following:

'0'-'7' means type of waveform,
'F' means "no change".

For more information see chapter IV, part "Waveform select".

[Kxy] FINE VOLUME SLIDE

This command fades the volume up or down at the given speed,
once per row.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'x' then 'y' is not used, and vice versa.

[Lxx] RETRIG NOTE

This command retriggers the note after 'xx' frames.
If no note is specified, last given is used.
The lower is the interval, the faster is the retrigger.

[Mxy] TREMOLO

This command causes the volume to oscillate with depth 'y' at speed 'x'.
If you specify 'xy' as '00' then the previous value will be used.
Tremolo acts like vibrato, but changing the volume instead of the pitch.

[Nxy] TREMOR

This command causes the volume to remain normal for 'x' frames, then fades the volume to zero for 'y' frames.

[Oxy] ARPEGGiO WITH VOLUME SLIDE

This command executes both Arpeggio and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Pxy] ARPEGGiO WITH FINE VOLUME SLIDE

This command executes both Arpeggio and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Qxy] MULTi RETRiG NOTE

This command retriggers the note after 'x' frames with specified volume change. Parameter 'y' gives type of volume change:

'0' is None,	'8' is Unused,
'1' is -1,	'9' is +1,
'2' is -2,	'a' is +2,
'3' is -4,	'b' is +4,
'4' is -8,	'c' is +8,
'5' is -16,	'd' is +16,
'6' is *2/3,	'e' is *3/2,
'7' is *1/2,	'f' is *2.

If no note is specified, last given is used.
The lower is the interval, the faster is the retrigger.

[Rxy] FREQUENCY SLIDE UP WITH VOLUME SLIDE

This command executes both Frequency slide up and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Sxy] FREQUENCY SLIDE DOWN WITH VOLUME SLIDE

This command executes both Frequency slide down and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Txy] FiNE FREQUENCY SLiDE UP WiTH VOLUME SLiDE

This command executes both Fine frequency slide up and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Uxy] FiNE FREQUENCY SLiDE DOWN WiTH VOLUME SLiDE

This command executes both Fine frequency slide down and Volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Vxy] FREQUENCY SLiDE UP WiTH FiNE VOLUME SLiDE

This command executes both Frequency slide up and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Wxy] FREQUENCY SLiDE DOWN WiTH FiNE VOLUME SLiDE

This command executes both Frequency slide down and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Xxy] FiNE FREQUENCY SLiDE UP WiTH FiNE VOLUME SLiDE

This command executes both Fine frequency slide up and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Yxy] FiNE FREQUENCY SLiDE DOWN WiTH FiNE VOLUME SLiDE

This command executes both Fine frequency slide down and Fine volume slide.
Parameter 'xy' gives speed of volume slide:

'x' is speed of slide up,
'y' is speed of slide down.

If you specify 'xy' as '00' then the previous value will be used.

[Z0x] SET TREMOLO DEPTH

This command changes the Tremolo depth of all 36 operators.
Parameter 'x' gives depth:

'0' is 1dB,
'1' is 4.8dB.

[Z1x] SET VIBRATO DEPTH

This command changes the Vibrato depth of all 36 operators.
Parameter 'x' gives depth:

'0' is 7%,
'1' is 14%.

[Z2x] SET MODULATOR'S ATTACK RATE

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Attack rate".

[Z3x] SET MODULATOR'S DECAY RATE

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Decay rate".

[Z4x] SET MODULATOR'S SUSTAIN LEVEL

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Sustain level".

[Z5x] SET MODULATOR'S RELEASE RATE

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Release rate".

[Z6x] SET CARRIER'S ATTACK RATE

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Attack rate".

[Z7x] SET CARRIER'S DECAY RATE

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Decay rate".

[Z8x] SET CARRIER'S SUSTAIN LEVEL

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Sustain level".

[Z9x] SET CARRIER'S RELEASE RATE

ADSR command. Parameter 'x' gives the value.
For more information see chapter IV, part "Release rate".

[ZAx] SET FEEDBACK STRENGTH

This command changes the Feedback strength of current instrument.
Parameter 'x' gives the value.
For more information see chapter IV, part "Feedback strength".

[ZBx] SET PANNING POSITION

This command changes the panning of current instrument.
Parameter 'x' gives position:

'0' is center,
'1' is left,
'2' is right.

[ZCx] PATTERN LOOP

Syntax: ZC0 - Set loopback point
 ZCx - Loop x times.

This pattern space-saving feature will cause the pattern to be looped 'x' times back to the last ZC0 command.
Note that you can only loop within the pattern, and each track has its own loopback information, so you are supposed to have corresponding ZC0 and ZCx commands in the same track in order to operate.
If ZCx commands are put in both effect columns, only the one in first column will operate.

[ZDx] RECURSIVE PATTERN LOOP

Syntax: ZD0 - Set loopback point
 ZDx - Loop x times.

This command is recursive variant of ZCx effect command.
It means that when such kind of loop is located inside other "parent" loop, it is proceeded any time it is passed by this loop.
Note that using ZC0 instead of ZD0 command has the same effect.
Please keep in mind that ZDx command should not be used in combination with ZCx command in other effect column, otherwise it will cause an endless loop.

[ZE0/ZE1] TOGGLE MACRO KEY-OFF LOOP

This command temporarily turns on-or-off looping of Key-Off phase in macro-table for current instrument.
Parameter 'x' gives the state to toggle:

'0' is OFF,
'1' is ON.

Note that "temporarily" means that the change is valid until there will be set different instrument than is the current one, for which this command

is to be used.

[ZE2/ZE3] TOGGLE RESTARTING ENVELOPE WITH TONE PORTAMENTO

This command turns on-or-off restarting of ADSR envelope for current track. It means, that the note key will be retriggered for every row with non-empty input in the note column (rows where note column is empty are not affected). Parameter 'x' gives the state to toggle:

'2' is OFF,
'3' is ON.

[ZE4] PERFORM RESTART ENVELOPE

This command restarts ADSR envelope for current instrument.

[ZE5/ZE6] TOGGLE 40P TRACK VOLUME LOCK

This command turns on-or-off 40P Track Volume Lock. If 40P Track Volume Lock is set, some of the volume effect commands will work in 40P mode instead of default (20P) mode. This means, that volume attenuation is calculated according 40P connection of the 2 used instruments in track 2) and 1), and you don't have to manage carrier/modulator output level to get desired volume level during playback. Parameter 'x' gives the state to toggle:

'5' is OFF,
'6' is ON.

Here is a complete list of commands that are affected by this lock:
5xy/6xy, Axy, Cxx, Gxy/Hxy, Kxy, Mxy, Rxy/Sxy, Txy/Uxy,
Vxy/Wxy, Xxy/Yxy, ^xy, %xx

Please note that when the 40P Track Volume Lock is set for particular 40P tracks, setting of 'Volume Scaling' is ignored (it is mandatory ON).

[ZF0] RELEASE SUSTAINING SOUND

This command causes the track volume to fade down immediately. Note that it nulls current Attack rate, Decay rate, Sustain level, and Release rate.

[ZF1] RESET INSTRUMENT VOLUME

This command resets back to modulator and carrier volume defined in modulator and carrier slot of current instrument.

[ZF2/ZF3] TOGGLE TRACK VOLUME LOCK

This command turns on-or-off the Volume Lock for current track. It means, that the track volume will remain constant for entire track. This constant is updated when using volume effect commands, or when using new instrument. Parameter 'x' gives the state to toggle:

'2' is ON,
'3' is OFF.

[ZF4/ZF5] TOGGLE VOLUME PEAK LOCK

This command turns on-or-off the Volume Peak Lock for current track. It means, that when performing a Volume Slide, the upper limit of track volume will remain lower or equal to volume level specified in carrier and modulator slot of corresponding instrument. Note that lock affects Volume Slide and Fine Volume Slide effects as well as Tremolo, Tremor and Multi Retrigger Note effects. Parameter 'x' gives the state of lock to toggle:

'4' is ON,
'5' is OFF.

[ZF6] TOGGLE MODULATOR VOLUME SLIDES

This command toggles volume slide for modulator slot only. If used together with ZF7 effect command, it toggles volume slide for both slots. Note that command will affect Volume Slide and Fine Volume Slide effects as well as Tremolo, Tremor and Multi Retrigger Note effects.

[ZF7] TOGGLE CARRIER VOLUME SLIDES

This command toggles volume slide for carrier slot only. If used together with ZF6 effect command, it toggles volume slide for both slots. Note that command will affect Volume Slide and Fine Volume Slide effects as well as Tremolo, Tremor and Multi Retrigger Note effects.

[ZF8] TOGGLE DEFAULT VOLUME SLIDES

This command toggles default volume slides. It means, that replay routine will distinguish which slot (carrier or both) to proceed from connection type (see chapter IV, part "Connection type"). Note that command will affect Volume Slide and Fine Volume Slide effects as well as Tremolo, Tremor and Multi Retrigger Note effects.

[ZF9/ZFA] TOGGLE TRACK PANNING LOCK

This command enables the Panning Lock. It means, that current panning position is forced for entire track, and can be updated only by ZBX effect command. This command turns on-or-off the Panning Lock for current track. It means, that current panning position is forced for entire track, and can be updated only by ZBX effect command. Parameter 'x' gives the state of lock to toggle:

'9' is ON,
'A' is OFF.

[ZFB] VIBRATO OFF

This command marks the end of Vibrato effect. It will restore the last frequency before Vibrato effect.

[ZFC] TREMOLO OFF

This command marks the end of Tremolo effect. It will restore the last volume before Tremolo effect.

[ZFD] FORCE FiNE ViBRATO (FORCE FiNE GLOBAL FREQ. SLiDE)

This command has to be used together with 4xy, 6xy or Hxy (>xx, <xx) effect command. It will cause the Vibrato (Global Freq. Slide Up/Down) effect to be performed once per row instead of every frame. Note that the switch is reset at the end of effect.

[ZFE] FORCE FiNE TREMOLO (FORCE EXTRA FiNE GLOBAL FREQ. SLiDE)

This command has to be used together with Mxy (>xx, <xx) effect command. It will cause the Tremolo (Global Freq. Slide Up/Down) effect to be performed once per row (once per every four frames). Note that the switch is reset at the end of effect.

[ZFF] FORCE NO RESTART FOR MACRO TABLES

- 1) This command can be used together with !xx (@xx) effect command. It will cause that the arpeggio (vibrato) table is swapped without restarting position. It means that the current position is maintained as the starting point in new table.
- 2) This command can be used while new note is triggered and the instrument that is played is using FM-register macro (arpeggio macro, vibrato macro resp.) In such case the macro is not restarted, which means that the current position in FM-register (arpeggio, vibrato resp.) macro table is maintained.

[#0x] SET CONNECTION TYPE

This command sets the connection type of current instrument. Parameter 'x' gives the value. For more information see chapter IV, part "Connection type".

[#1x] SET MODULATOR'S MULTIPLIER

This command sets the modulator's multiplier of current instrument. Parameter 'x' gives the value. For more information see chapter IV, part "Frequency data multiplier".

[#2x] SET MODULATOR'S KSL

This command sets the modulator's scaling level of current instrument. Parameter 'x' gives the value. For more information see chapter IV, part "Key scaling level".

[#3x] SET MODULATOR'S TREMOLO

This command sets the modulator's tremolo on-or-off for current instrument. Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Tremolo (Amplitude modulation)".

[#4x] SET MODULATOR'S ViBRATO

This command sets the modulator's vibrato on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Vibrato)".

[#5x] SET MODULATOR'S KSR

This command sets the modulator's KSR on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Key scale rate".

[#6x] SET MODULATOR'S SUSTAIN

This command sets the modulator's sustain on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Sustain (Envelope generator)".

[#7x] SET CARRIER'S MULTIPLIER

This command sets the carrier's multiplier of current instrument.
Parameter 'x' gives the value.
For more information see chapter IV, part "Frequency data multiplier".

[#8x] SET CARRIER'S KSL

This command sets the carrier's scaling level of current instrument.
Parameter 'x' gives the value.
For more information see chapter IV, part "Key scaling level".

[#9x] SET CARRIER'S TREMOLO

This command sets the carrier's tremolo on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Tremolo (Amplitude modulation)".

[#Ax] SET CARRIER'S VIBRATO

This command sets the carrier's vibrato on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,

'1' is ON.

For more information see chapter IV, part "Vibrato)".

[#Bx] SET CARRIER'S KSR

This command sets the carrier's KSR on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Key scale rate".

[#Cx] SET CARRIER'S SUSTAIN

This command sets the carrier's sustain on-or-off for current instrument.
Parameter 'x' gives the state:

'0' is OFF,
'1' is ON.

For more information see chapter IV, part "Sustain (Envelope generator)".

[%0x] PATTERN DELAY (FRAMES)

This command will delay the pattern 'x' frames.
If two '%0x' commands are given, then the command in the
higher track will take effect.

[%1x] PATTERN DELAY (ROWS)

This command will cause a pause on the row for effectively 'x' rows longer.
If two '%1x' commands are given, then the command in the
higher track will take effect.

[%2x] NOTE DELAY

This command will delay the note 'x' frames.

[%3x] NOTE CUT

This command cuts the note (Key-Off will be performed) after 'x' frames.

[%4x] FINE-TUNE UP

This command fine-tunes frequency up.
If used together with a note, it overrides the default note frequency
before the note is outputted (acts like fine-tune parameter
included in instrument data).
Parameter 'x' gives frequency shift.

[%5x] FINE-TUNE DOWN

This command fine-tunes frequency down as stated above.

[&6x] GLOBAL VOLUME SLIDE UP

This command fades the global volume up at the given speed.
Parameter 'x' gives speed of slide.

[&7x] GLOBAL VOLUME SLIDE DOWN

This command fades the global volume down at the given speed.
Parameter 'x' gives speed of slide.

[&8x] FINE GLOBAL VOLUME SLIDE UP

This command fades the global volume up at the given speed,
once per row.
Parameter 'x' gives speed of slide.

[&9x] FINE GLOBAL VOLUME SLIDE DOWN

This command fades the global volume down at the given speed,
once per row.
Parameter 'x' gives speed of slide.

[&Ax] EXTRA FINE GLOBAL VOLUME SLIDE UP

This command fades the global volume up at the given speed,
once every four frames.
Parameter 'x' gives speed of slide.

[&Bx] EXTRA FINE GLOBAL VOLUME SLIDE DOWN

This command fades the global volume down as stated above.

[&Cx] EXTRA FINE VOLUME SLIDE UP

This command fades the volume up at the given speed,
once every four frames.
It means that you can do four times more accurate slide effects.
Parameter 'x' gives speed of slide.

[&Dx] EXTRA FINE VOLUME SLIDE DOWN

This command fades the volume down as stated above.

[&Ex] EXTRA FINE FREQUENCY SLIDE UP

This command slides frequency up (pitch bend), once every four frames.
It means that you can do four times more accurate slide effects.
Parameter 'x' gives speed of slide.

[&Fx] EXTRA FiNE FREQUENCY SLiDE DOWN

This command slides frequency down as stated above.

[\$xy] EXTRA FiNE ARPEGGiO

This command is a variant of 0xy (Arpeggio) effect command.
It executes the arpeggio once every four frames.
It means that you can do four times more accurate arpeggio effects.
Note that the song speed doesn't have to be greater or equal to three as it is in case of normal arpeggio.

[~xy] EXTRA FiNE ViBRATO

This command is a variant of 4xy (Vibrato) effect command.
It executes the vibrato once every four frames.
It means that you can do four times more accurate vibrato effects.

[^xy] EXTRA FiNE TREMOLO

This command is a variant of Mxy (Tremolo) effect command.
It executes the tremolo once every four frames.
It means that you can do four times more accurate tremolo effects.

[!xx] SWAP ARPEGGiO TABLE

This command temporarily swaps the arpeggio table for current instrument.
Parameter 'xx' gives number of new table.
Note that the number of arpeggio table in instrument macro-table remains intact, and "temporarily" means that the change is valid until there is another note or instrument set.

[@xx] SWAP ViBRATO TABLE

This command temporarily swaps the vibrato table for current instrument.
Parameter 'xx' gives number of new table.
Note that the number of vibrato table in instrument macro-table remains intact, and "temporarily" means that the change is valid until there is another note or instrument set.

[=xx] FORCE iNSTRUMENT VOLUME

This command is a variant of Cxx (Set Instrument volume) effect command.
The difference is in modulator's role when affecting volume, because it scales the modulator volume according to 'xx' value, no matter what is the connection type of the instrument.
Note that the carrier volume is set as usual.
Value of 'xx' ranges from 0 to 3F (softest -> loudest).

[%xx] SET GLOBAL VOLUME

This command sets the global volume of song.
Value of 'xx' ranges from 0 to 3F (softest -> loudest).

[>xx] GLOBAL FREQ. SLiDE UP

This command slides the frequency up (pitch bend) in all tracks from current to last, if it's not overridden by using another '<xx' or '>xx' in second effect column or one of succeeding tracks. Parameter 'xx' gives speed of slide.

Note that you can also use Fine or Extra Fine variant of this command by putting command switch 'ZFD' or 'ZFE' into second effect column.

[<xx] GLOBAL FREQ. SLIDE DOWN

This command slides frequency down as stated above.

[`xx] SET CUSTOM SPEED TABLE

This command sets custom speed table for Vibrato/Tremolo effect, which is generated according given parameter 'xx':

'00' Reset default speed table
'01-FF' Calculate custom speed table with parameters
 table size, maximum value and processing speed factor

PARAMETER	Size	MAX.	FACTOR
[01]..[EF]	32	01..EF	x1
[F0]..[F3]	32	FF	x1..x4
[F4]..[F7]	64	FF	x1..x4
[F8]..[FB]	128	FF	x1..x4
[FC]..[FF]	256	FF	x1..x4

For information on custom speed tables please refer to:
<http://www.adlibtracker.net/files/techinfo.htm>

VI. SONG VARIABLES

SONGNAME

You can specify how should be the song called here.
The maximal length of string is 42 characters.

COMPOSER

You can specify who was the creative person that made the song here.
The maximal length of string is 42 characters.

INSTRUMENTS, PATTERNS, ORDER LIST ENTRIES

These are just values for information about number of common items used.
You cannot change them since they are calculated by the tracker.

SONG TEMPO

With range 1-255, you can specify what will be the initial song tempo here. The value is decimal, the unit used is "frames per second" (Hz). However, you can calculate the tempo also in "beats per minute" (BPM) with the following formula:

$$(\text{tempo_in_Hz} * 2.5) = \text{tempo_in_BPM}$$

SONG SPEED

With range 1-FF, you can specify what will be the initial song speed here. The value is hexadecimal, the unit used is "frames per row". There is also an Update switch beside the song speed field. You can specify there, whether the song speed should be reset to "initial" when song loops back to order 0.

MACRODEF. x

With optional range, you can specify what will be the multiplying factor for macro-definitions here.

i.e. 1 means that the macro commands will be triggered once per frame,
2 means twice per frame (speed-up is 2),
3 means three times per frame (speed-up is 3), and so on.

TRACK VOLUME LOCK

You can specify the initial Volume Lock state here. If Volume Lock is set, you can also set its initial settings for all available tracks in the Initial Lock Settings. For more information see chapter V, part "Lock track volume".

TRACK PANNING LOCK

You can specify the initial Panning Lock state here. If Panning Lock is set, you can also set its initial settings for all available tracks in the Initial Lock Settings. For more information see chapter V, part "Lock track panning".

VOLUME PEAK LOCK

You can specify the initial Peak Lock state here. If Peak Lock is set, you can also set its initial settings for all available tracks in the Initial Lock Settings. For more information see chapter V, part "Lock volume peak".

4-OP TRACK EXTENSION

You can specify whether to use the 4-operator track extension on corresponding tracks here. Note that this adjusts the number of tracks if necessary. This mode is a bit complicated so it is recommended to experiment to gain familiarity with making 4-op instruments :-)

TREMOLO DEPTH

You can specify the initial tremolo depth here.

See also chapter V, part "Tremolo".

ViBRATO DEPTH

You can specify the initial vibrato depth here.
See also chapter V, part "Vibrato".

PATTERN LENGTH

With range 1-256, you can specify what will be the pattern length here.
Note that the pattern length value affects whole song.

NUMBER OF TRACKS

With range 1-20, you can specify what will be the number of tracks here.
Note that value above 18 automatically toggles percussion mode ON.

PERCUSSION TRACK EXTENSION (BD,SD,TT,TC,HH)

You can specify whether to use 5 percussion tracks here.
Note that percussion mode automatically changes the number of tracks to 20,
but you can decrease the value as neccessary though.
This mode is slightly hard to use (particularly the "SD/TT/TC/HH" tracks)
so it is not recommended unless you know how it works or gain familiarity
with it after several experiments :-)

VOLUME SCALiNG

(iMPORTANT OPTiON)
You can specify whether to use volume scaling mode here.
Volume scaling mode differs from default mode in handling the volume
when performing effect commands. When in default mode, the volume is set to
value requested in effect column whatever is the base volume specified in
carrier or modulator cell of instrument.
When in volume scaling mode, any change of volume with effect command is
calculated as scaled base volume of instrument.

iNiTiAl LOCK SETTiNGS

You can specify the initial settings of Panning Lock, Volume Slide type,
Volume Lock, and Peak Lock for corresponding track here.

VII. GETTiNG STARTED

Any piece of music written with the /-|DLiB TR/-|CK3R][is built up
from patterns. Each pattern is built up from 1 to 18/20 tracks.
A pattern is 1 to 256 lines long. The line where the cursor is always
the one you edit. If you need shorter patterns and you don't want
to shorten the overall pattern length in song variables,
use the Pattern Break effect command (Bxx).
A track is built up like this:

LiNE	1	2
------	---	---

	37	...	..	...	...	...
	38	A#5	01	...	...	...
	39	A-4	..	330	...	C-2
	3A	...	..	300	...	---
	3B	...	..	300	...	...
	3C	...	..	...	...	D#2
	3D	D#1	02	...	...	---
	3E	C-2	01	...	...	...
current line →	3F	C-4	01	C20	201	C-2

	^	^	^	^	
note	└				effect command 2
		└			effect command 1
			└		instrument

The C-4 is the note being played at pattern position 3F, 01 is the instrument number, and the following six digits are the two effect commands, in this case, Set Volume to 20 Hex, and Frequency Slide Down by 1 unit per frame. Remember that values for instruments and effects are always hexadecimal!

You can enter the note by switching into MBoard mode while the song is Stopped or while the song is Paused with no Trace or by setting this mode OFF (Shift+Space to toggle) then by just typing the note into the corresponding fields.

Likewise, you can either type in the instrument number. The instrument number corresponds to the active instrument. You can check the active instrument at the bottom of main screen or directly in the Instrument Control panel.

If in MBoard mode, this will be entered automatically when a note is entered through the keyboard (MBoard keys).

Typing in the instrument number (if "update_ins" option is ON) will affect the numbers in following lines and the active instrument in Instrument Control panel. After you have edited all your patterns, you have to determine the pattern order. For that simply use the Pattern Order editor. Enter (while the song is Stopped or while it is Played with no Trace) will toggle the Pattern Order editor.

Furthermore, you can define a restart position.

Here's an example:

Let's say you have entered three patterns (numbers 0, 1 and 2) and want to play the pattern 2 twice, then pattern 0 and finally pattern number 1 three times. Afterwards the music should start from order 2 (with the pattern 0) again.

Edit the pattern order like this:

00	02	04	01	
01	02	05	01	
02	00	06	82	← jump to order 2
03	01	07	80	

	^	^	
		└	pattern number (entry)
order number	└		

To enter the notes /|DLiB TR/|CK3R][uses a piano-like keyboard layout when in MBoard mode (see chapter III, part "I" for the layout).

The program supports 8 octaves. You can see the active octave in the bottom of main screen or directly in the Octave Control panel.

When both MBoard and Tracking mode are OFF, you can type in the notes into their corresponding fields.

VIII. USEFUL TIPS

- TIP 1** The tracker is capable of highlighting corresponding lines. You can toggle this mode on-and-off with Alt+M, and setup by Alt+L.
- TIP 2** You can preview an instrument before loading it. In the file open dialog or bank browser, use MBoard keys while cursor is positioned on instrument you want to preview.
- TIP 3** When in Debug mode, you can trace the song row by row with Space key from Pattern Editor as well as from Debug info window toggled by holding Ctrl+Alt. When the song is played with Trace, you can temporarily turn on Debug mode and process row by row playing with Space key directly from Debug info window.
- TIP 4** When transposing patterns, it's sometimes useful to keep some of notes intact from changes (e.g. drums). You can do that by holding Right-Shift key while putting notes using MBoard keys, or you can remark already put notes to-or-from fixed state in single steps or in blocks by Shift+Enter.
- TIP 5** You can force /|DLiB TR/|CK3R][to behave like Scream Tracker or FastTracker when typing in commands within the Pattern Editor and Macro Editor window.

		ADTRACK2.INI SETTINGS FOR DEFAULT MODE: "command_typing=" AND "cycle_pattern="
TYPiNG MODE	FLAG	
Adlib Tracker II	AT	1/OFF
FastTracker	FT	1/ON
Scream Tracker	ST	2/OFF

You can set each of these modes as default mode on program start with corresponding settings in configuration file as shown in the above table. You can, however, switch over these modes anytime later, using respective combination of keys. Please note that when you set command typing to 0 (mOrOn), you cannot switch over any of these modes.

- TIP 6** You are reminded of changes you have made to the song. In the status window, a small diskette icon appears in case there were changes since last loading or saving.
- TIP 7** You can get information about track properties while Playing, Debugging, Tracking or even if song is Paused in the upper area of Pattern Editor (beside corresponding track number).

()	panning Center	← if panning indicator changes color, it means that the Panning Lock has been activated/deactivated; for more information, see chapter V, effect ZBx, and effect ZF9, and also chapter VI, part "Track Panning Lock"
(	panning Left
)	panning Right	
1)40P	first 4-op track (main)	
2)40P	second 4-op track	
BD	Bass Drum track	← for more information, see chapter V, effects ZF6,
SD	Snare Drum track	
TT	Tom Tom track	
TC	Top Cymbal track	
HH	Hi-Hat track	
M^	Modulator volume slides	← for more information, see chapter V, effects ZF6,
C^	Carrier volume slides	

&^	Car w/ Mod volume slides	ZF7 and ZF8
P+ V+	Peak Lock active Volume Lock active	<- for more information, see chapter V, effect ZF2, and effect ZF4

- Tip 8** You are able to gain different setups for corresponding directory by creating directory-specific configuration. Simply place your "ini" file where you want to use corresponding setup, and run the tracker from within this directory (it's useful to make a batch file there).
- Tip 9** You can use shortcut [BackSpace] for upper-dir and [\] for root in File Selector.
- Tip 10** You can play your songs one after another by pressing Shift+Enter instead of Enter key in File Selector.
- Tip 11** While working with 4-op tracks, marking instruments in Instrument Control panel will choose a set of instruments for corresponding 4-op tracks. Two instruments will be then always used as "current" instead of one. You can keep track of them in the Instrument Control panel as well as in the Status Line.
- Tip 12** While working with 4-op tracks, panning works within both channels if you have used some AM connection at least in one of the two instruments. You are then able for example play some operators in one channel and others elsewhere.
- Tip 13** While working with instrument macro-definitions, don't forget to paste appropriate instrument data to FM-register table first in order to use it. You can do that with ^Enter key, which pastes default instrument data to current row.
- Tip 14** While working with clipboard, you can use paste same copied object to more pattern(s) quite easily. Simply copy the object to clipboard as usual, and press [Alt][Shift] P key. Then the Pattern List will appear, where you can select a single pattern or multiple patterns with [Space] as a destination. Then press Enter key to apply.
- Tip 15** You can load a pattern to a multiple destination--pattern(s) when in Pattern List and there are some marked patterns. Simply mark one or several patterns with [Space] and load desired pattern file.
- Tip 16** If working with percussion mode (respect then :) percussion tracks SD/TT/TC/HH may stop responding. Go to the File Variables window and set the percussion mode switch off-and-on. After 1-3 retries the tracks should start responding again.
- Tip 17** While testing/previewing an instrument within Instrument Control, Instrument Editor or bank browser, you can check the macro table key-off phase of this instrument. In order to do that, hold [Ctrl] key before releasing the MBoard key, and note(s) will trail in key-off phase until you release [Ctrl] key. Furthermore, you can check the key-off phase with "key-off loop". In this case, hold the Ctrl+Alt keys pressed when releasing the MBoard key.
- Tip 18** The tracker features both simple playback mode and playback mode with synchronization. The advantage of synchro-playback is that you can gain authentic and accurate sound at any time and any point. The playback is synchronized everytime when it's neccassary, so all the playing effects, song tempo, song speed, song timer a.o. are just the same as they are when playing whole song from start. The disadvantage is that it sometimes takes awhile (maybe longer :) when playback synchronizes (depending on CPU and song structure) Anyway, you can leave the sync-mode using [Alt] variant of playback

shortcut (i.e. Alt+F5, Alt+F8 and Alt+F9) even if the song is already playing. Note that you can set up playing without synchronization as the default action in configuration file (set option "nosync_by_default" to ON).

- TiP 19** You can play the current pattern in single-playing mode. It means, that you are able to play patterns that are not signed in pattern order. The whole pattern is played with repeating then. You can toggle this playback mode with Alt+F6.
- TiP 20** If working with macro-definitions, you can disable one or more columns in FM-register table. This is useful when you need to change only single or a few parameters (i.e. volume fading, pitch sliding) with macro-definitions and other parameters with pattern effects. This mode works similary as disabling tracks in Pattern Editor, but using Ctrl+Backspace for single ON/OFF instead.
- TiP 21** When making macro-instruments, it's sometimes useful to reset the ADSR envelope several times during macro-cycle. You can do this by setting the note retrigger for appropriate row of macro-table; Ctrl+N toggles ON the retrigger for corresponding row and Ctrl+Alt+N resets flags on all rows.
- TiP 22** You can control the playback from within the Instrument Control panel. Following commands are functional:
- | | |
|-----------------|---|
| F5 | Play |
| F6 | Pause |
| F7 | Stop |
| F9 | Play current pattern or order only |
| [Ctrl] Home,End | * Skip to previous/next pattern while Tracing |
| +, - | * Same as above; play pattern from start |
- NOTE: Commands marked with asterisk (*) work only while the name of instrument is not being edited.
- TiP 23** You can control current instrument directly in Macro Editor window using Ctrl+[] keys. It is even possible to control current instrument and octave while in macro-preview mode.
- TiP 24** When working with /-|DLiB TR/-|CK3R][native bank files (A2B, A2W), you can force loading complete bank instead of going to bank browser. This can be done easily by pressing Shift+Enter instead of Enter key in File Selector.
- TiP 25** All options from config file can be controlled also directly from command line. Syntax for usage is as following:
- ```
"adtrack2.exe [[/cfg:option] [...]]"
e.g. "adtrack2.exe /cfg:sdl_screen_mode=2 /cfg:sdl_frame_rate=150"
```
- TiP 26** When deleting notes in Note Recorder mode, you can fast-forward or rewind playback while deleting them. All you need to do is press Up or Down key while still holding the Backspace key. Furthermore, you can delete all notes within marked group of tracks at once with pressing Ctrl+Backspace.
- TiP 27** When deleting notes in Note Recorder mode, you can fast-forward or rewind playback while deleting them. All you need to do is press Up or Down key while still holding the Backspace key.
- TiP 28** When working with banks containing 40P instruments, it may be sometimes useful to put instrument data from one of the 2 paired instruments only. This can be done by pressing Shift+Enter instead of Enter (which puts instrument data for complete 40P pair).

There are no major issues known for this version of program J

## **REMiNDER**

If you are encountering any problem with this program, please send a bugreport to my email address (stated below in this document).

## **X. EPiLOGUE**

## **HONEST 'THANK YOU' TO FOLLOWiNG PEOPLE**

(in random order)

Florian Klaempfl and others [Free Pascal Compiler 2.6.4]  
Simple DirectMedia Layer [SDL 1.2.15]  
Daniel F. Moisset [SDL4Freepascal-1.2.0.0]  
Alexey Khokholov [NukedOPL3 1.6]  
Haruhiko Okomura & Haruyasu Yoshizaki [LZH algorithm]  
Markus Oberhumer, Laszlo Molnar & John Reiser [UPX 3.91w]

(further in alphabetical order)

Daniel Illgen (insane/Altair)  
David Cohen (Diode Milliampere)  
Dmitry Smagin  
Janwillem Jagersma  
Florian Jung (Windfisch)  
Maan M. Hamze  
Mikkel Hastrup (encore)  
Nick Balega  
PissMasterPlus  
Slawomir Bubel (Malfunction/Altair)  
Sven Renner (NeuralNET)  
Tyler Montbriand (Corona688)

## **GET THE LATEST VERSiON FROM**

<http://www.adlibtracker.net>

For complete AT2 revision history please refer to:

<http://www.adlibtracker.net/files/revision.htm>

For complete AT2 file format description please refer to:

<http://www.adlibtracker.net/files/techinfo.htm>

## **SEND YOUR QUESTiONS, SUGGESTiONS, AND CRiTiCiSM TO**

[subz3ro.altair@gmail.com](mailto:subz3ro.altair@gmail.com)

This document was last updated on July 24, 2016.